OTHER REFERENCES REVIEWED DURING RSP EVALUATION:

(Annotated)

An Earthquake Loss-Prediction Methodology for High technology Industries (1985). Report by EQE Inc. for NSF, San Francisco, CA. (The procedure in this report uses a detailed inventory of structural components such as beams, columns, and partitions for use with damage information. Too detailed for RSP.)

Arnold, C. (1982). *Earthquake Disaster Prevention Planning in Japan.* Building Systems Development Inc., San Mateo, CA. (General discussion of disaster prevention planning in Japan. No RSP.)

ATC (1982). *An Investigation of the Correlation Between Earthquake Ground Motion and Building Performance,* Applied Technology Council, ATC-10 Report, Palo Alto,CA. (An investigation of the correlation between earthquake ground motion and building performance, this work is cited only because its Table 2 (p. 10) provides a good summary of the general seismic capacity of typical building types.)

Bouhafs, M. (1985). *Evaluation of the Seismic Performance of Existing Buildings.* College of Environmental Design, U.C. Berkeley, CA. (A detailed computer program, (ESP) for the evaluation of seismic performance, including soil modeling, static and dynamic analysis and damage analysis. No RSP.)

Bresler, B. (1985). "State-of-the-Art Assessment". Proceedings, Workshop on Reducing Seismic Hazards of Existing Buildings, FEMA 91. (State-of-the-art review of methods for (a) identifying potentially hazardous buildings, (b) evaluating seismic performance of such buildings, and (c) developing criteria for seismic retrofit.)

Eagling, D. G., ed. (1983). *Seismic Safety Guide.* Lawrence Berkeley Laboratory, Berkeley, CA. (Evaluation of existing buildings includes complete drawings, soils reports, construction inspection reports, original calculations and alteration plans, and field test beyond the scope of an RSP.)

Earthquake Safety: Potentially Hazardous Buildings (1985). Committee on Hazardous Buildings of the Seismic Safety Commission, SSC 85-04. (Contains description of types of potentially hazardous buildings in California and generalized philosophy for abatement. No RSP.)

Earthquake Vulnerability Survey of Southern California Defense Contractors, Preliminary Assessment (1985). Defense Contract Administration Services Management Area. (No visual screening.)

Freeman, S. A., Willsea, F. J., and A. T. Merovich (1979). *Evaluating Old Buildings for New Earthquake Criteria.* Preprint ASCE spring convention. (No explicit method for visual screening).

Handbook for Identification and Analysis of Potentially Hazardous Unreinforced Masonry Bearing Wall Buildings (1987). Report by Southern California Earthquake Preparedness Project.

Hasselman, T. K., Eguchi, R. T., and J .H. Wiggins (1980). *Assessment of Damageability for Existing Buildings in a Natural Hazards Environment, Vol I: Methodology.* J.H. Wiggins Co. for NSF. (Development of computer program "DAMAGE," a tool for local building officials to assess damageability of buildings exposed to earthquakes, sèvere winds and tornados. No RSP.)

Heger, F. J. and R. W. Luft (1977). *Structural Evaluation of Existing Buildings in Massachusetts for Seismic Resistance.* Dept. of Civil Engineering, Massachusetts Institute of Technology, R77-44. (A short general discussion and comparison of three available methods of evaluating existing buildings but no specific RSP.)

ISO (1983). *Guide for Determination of Earthquake Classifications.* Insurance Services Office (copyrighted). (A guide for use in the insurance industry, for determining the Rate Group, which then determines the applicable premium rate per the Commercial Lines Manual. A building is assigned to a Rate Group on the basis of a step-by-step procedure involving Building Classification Rating Points, BCRP. These points are assigned on the basis of framing system, walls, partitions, diaphragms, area, height, ornamentation, shape, equipment, design, and quality control. Penalties for site-dependent, geologic-related hazards, and exposure hazards such as pounding and overhanging elements, are noted. This information is presumably furnished by the insurance applicant, and may be supported by a full set of construction drawings and a statement by the design professional indicating the type of framing system and materials of construction, the level of seismic forces for which the building was designed, and a description of any special damage control measures taken. Explicit visual aspects are not discussed. The BCRP are perhaps useful for weighting various factors such as wall types, ornamentation, or foundation materials. The background for the numerical values of these is not presented, however. They may be derived from similar considerations as the modifiers in Steinbrugge, 1982.)

Lev, O.E. (1980). "A System for Evaluation and Mitigation of Regional Earthquake Damage. Proceedings, Seventh World Conference on Earthquake Engineering, Istanbul, Turkey. (A computer program REDEEM for regional earthquake damage estimation. No RSP.)

Lew, T. K. (1986). *Historic Earthquake Damage for Buildings and Damage Estimated by the Rapid Seismic Analysis Procedure: A Comparison.* Naval Civil Engineering Lab., R-918, Port Hueneme, CA. (Rapid seismic analysis procedure, not an RSP.)

Lew, T. K., S. K. Takahashi, (1978). *Rapid Seismic Analysis Procedure.* Naval Facilities Eng. Command, Tech. Memo. 51-78-02, Naval Construction Battalion Center, Pt. Hueneme. (Initial screening of buildings is based solely on "mission important and/or major permanent buildings." All of these buildings are then examined via the Rapid Seismic Analysis Procedure, which is an abbreviated engineering analysis.)

Liu, B.C., et al. (1981). *Earthquake Risk and Damage Functions: Application to New Madrid.* Westview Press, Boulder CO, 297 pp. (Does not involve site visits at all.)

McClure, F. (1973). *Survey and Evaluation of Existing Buildings.* In NBS BSS 46, Building Practices for Disaster Mitigation, National Bur. Standards, Washington, DC. (Generally

concerned with post-earthquake damage evaluation.)

McClure, F. E., Degenkolb, H. J., Steinbrugge, K. V., and R. A. Olson (1979). *Evaluating the Seismic Hazard of State Owned Buildings*. California Seismic Safety Commission, Sacramento, CA. (Cost-benefit analysis, no RSP.)

Morton, D. T. and W. E. Myers (1981). "A Program for Rehabilitation of Commercial Buildings to Meet Earthquake Standards." Proceedings, 50th Annual SEAOC Convention, Coronado, CA, 5566.

Nowak, A.S. and E.L.R. Morrison (1982). *Earthquake Hazard Analysis for Commercial Buildings in Memphis*. Dept. of Civil Engineering, U. Michigan, Ann Arbor, UMEE 82R2. (Damage predicted using structural analysis procedure. Although some sites were visited, this was not an RSP.)

Pre-Earthquake Planning for Post-Earthquake Rebuilding (PEPPER), Summary Report of Structural Hazards and Damage Patterns (1984). William Spangle & Assoc. and H. J. Degenkolb Assoc. for NSF. (Inventory for damage estimation was taken from Land Use Planning and Management System File for the City of Los Angeles. No RSP.)

Rehabilitating Hazardous Masonry Buildings: A Draft Model Ordinance (1985). California Seismic Safety Commission, SSC 85-06. (A model ordinance developed as a guideline for local governments planning seismic rehabilitation programs. Based on ordinance and survey performed in the City of Los Angeles.)

Reitherman, R. (1985). *A Review of Earthquake Damage Estimation Methods*. Earthquake Spectra, Vol 1. No. 4, 805-847.

Richter, C.F. (1958). *Elementary Seismology*. W.H. Freeman and Co., Inc., San Francisco, CA.

SCEPP (1983). *San Bernardino County Pilot Project for Earthquake Hazard Assessment*. Final Draft, Van Nuys, CA. (Pilot project to estimate damage - did not involve site visit.)

Scholl, R. (1979). *Seismic Damage Assessment for High-Rise Buildings*. Annual Technical Report to USGS. (The data collection in this report refers to building damage in past earthquakes for the purpose of developing damage functions for different types of structures.) Seismic Design for Buildings (1982). Depts. of Army, Navy, and Air Force, Tech. Man. 5-809-10. (Contains only discussions of design procedures for buildings. No discussion of existing buildings.)

Seismic Design Guidelines for Essential Buildings (1984). Depts. of Army, Navy, and Air Force, Tech. Man. 5-809-10.1. (Contains only discussions of analysis and design of essential facilities. No discussion of existing buildings. No RSP.)

Tandowsky, S., Hanson, C., and C. Beauvoir (1986). "Seismic Vulnerability Studies of Buildings at Military Facilities in the Southeastern United States." Proceedings, Third U.S. Conf. on Earthquake Engineering, Charleston, SC, pp. 1851-1861. (This is a three-phase evaluation of approximately 200 buildings at four Navy and Marine Corps facilities. The first phase involves a

review of existing construction documents and a physical inspection resulting in a four class vulnerability rating varying from "likely to incur severe damage" to "unlikely to receive observable damage to structure." The higher two classes were recommended for further review. The second phase is the Navy rapid seismic evaluation procedure, and the third a detailed analysis. After the first two phases, more than 80 percent had been recommended for phase three.)

Tyrrell, J.V. and B. Curry (1986). "The U.S. Navy's Earthquake Safety Program." Proceedings, Third U.S. Conf. on Earthquake Engineering, Charleston, SC, pp. 1863-1872. (This is similar to the method described in Tandowsky et al. using an initial screening procedure, followed by the Navy rapid seismic analysis procedure. Before the visual screening, computer data were used to eliminate seven classes of structures, primarily smaller and less expensive structures, and structures scheduled to be replaced in the next five years.)

UNESCO (1982). *Earthquake Risk Reduction in the Balkans.* Reports of Working Groups A-E, UNDP Proj. RER/79/014. (Basically, these reports deal with seismic hazard analysis, vulnerability and recent damage experience, model code development, dynamic behavior of soils, and of structures. No effort for rapid visual screening of hazardous buildings.)

Werner, S. D. (1987). *Rapid Analysis Procedure for Water Supply System Structures.* Memorandum, Wiss, Janney, Elstner Assoc., Emeryville, CA. (A two-phase procedure, the first being a walk-through of all structures to document structural information, building importance, and present condition to determine which structures need further evaluation. A second, more detailed survey is carried out for those buildings selected in the first previous step. The Navy rapid analysis procedure is used to estimate damage for the building.)

Yao, J.T.P. (1985). *Safety and Reliability of Existing Structures.* Pitman, Boston, 130 pp. (SPERIL is a computer-based damage assessment system for evaluating the damage a building has sustained after an earthquake. It is a rule-based (i.e., expert) system incorporating data from loading tests pre- and post-earthquake, visual data, and accelerometer records during the strong motion, in a fuzzy set formulation. Not directly relevant but included herein because of its use of fuzzy sets and related aspects.)